

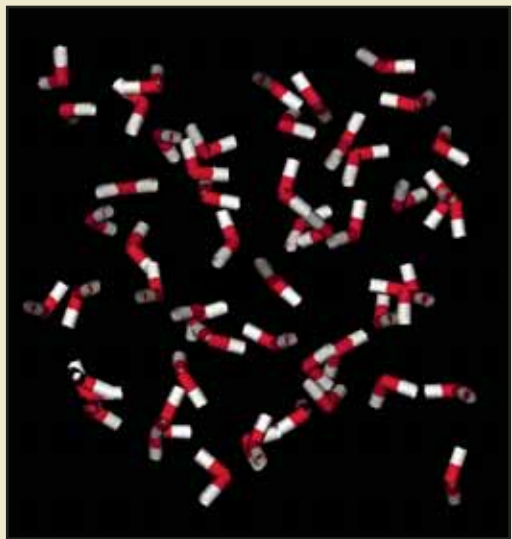


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Mystery of icy planets unravelled

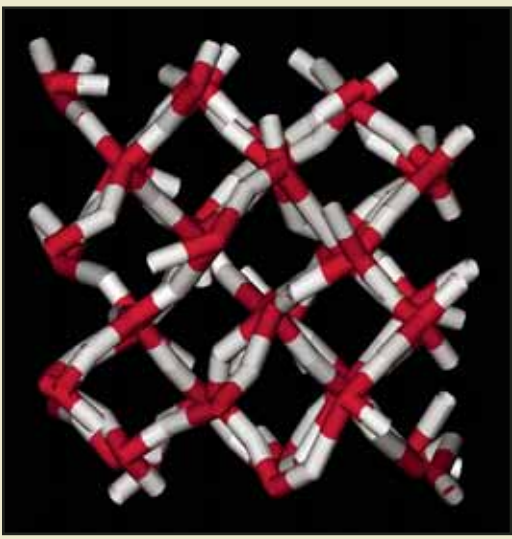


Water atoms at room temperature.

By Anne M. Stark
NEWSLINE STAFF WRITER

By recreating extreme pressures and temperatures in the laboratory, Livermore scientists are unraveling the mysterious behavior of water in the interiors and magnetic fields of icy large planets.

The conditions in planets such as Neptune and Uranus are extreme, with temperatures greater than 17,000 degrees Fahrenheit and



Water in the superionic phase.

pressures eight million times greater than that on Earth.

Under these conditions, Laboratory scientists have discovered a “superionic” phase of water - neither ice nor liquid - in which the oxygen atoms remain virtually stationary while the hydrogen atoms are extraordinarily mobile.

“This shows how extreme pressures and temperatures can completely transform water

See **SUPERIONIC**, page 8

Physicist Stuart Freedman adds new flavor to nature of ubiquitous neutrino

By Anne M. Stark
NEWSLINE STAFF WRITER

Only nuclear reactors and giant underground detectors can truly explain how neutrinos — a fundamental particle produced by the Sun, cosmic rays, reactors and accelerators — can change from one type to another.

That’s the message from Stuart Freedman, a UC Berkeley physics professor and senior scientist at Lawrence Berkeley National Laboratory, who visited the Laboratory Tuesday as a guest speaker of the Director’s Distinguished Lecturer Series.

“Everyone knows they are ubiquitous, and one hundred billion of them are going through every square foot of this room per second without ever interacting with anything,” Freedman said during his opening of “The Decade of the Neutrino.”

For years, scientists have been working to discover how neutrinos “change flavors.”

Neutrinos come in three “flavors:” electron, muon and tau. Each is related to a charged particle, which gives the corresponding neutrino its name. Neutrinos are extremely difficult to detect because they rarely interact with anything. Though they can easily pass through a human hand, solid walls and even a planet,

See **FREEDMAN**, page 8

Good chemistry at the root of distinguished Lab career for retiring Dorothy Bishop

By Lynda Seaver
NEWSLINE STAFF WRITER

In more than 30 years at the Laboratory, environmental chemist Dorothy Bishop has never forgotten her roots. Same goes for her fruits, veggies, nuts and fiber.

A born and bred 4-H fanatic, Bishop’s childhood passion provided the opportunity to attend a special summer camp for 4-H-ers at Oregon State University. While others dabbled in the care and raising of livestock, Bishop found herself gravitating toward food chemistry. Hints of this past can be found in the posters that adorn her office — “periodic tables” of fruits and fiber, veggies and other foods.

“Turns out environmental chemistry is not

See **BISHOP**, page 5

Hall of fame



LYNDA SEAVER/NEWSLINE

Sherry Hu of KPIX-TV, left, and Alameda County Supervisor Keith Carson, hand an award to Computation Associate Director Dona Crawford for being inducted into the Alameda County Women’s Hall of Fame.



Globe trotting retirees report
— Page 2



Stories from the archives
— Page 3



Vehicular safety and etiquette
— Page 5



LAB COMMUNITY NEWS

Weekly Calendar

Technical Meeting Calendar, page 4

Wednesday
6

The next session of the Living Well Health and Fitness Series, **“Relaxation Techniques for Wellness and Stress Reduction,”** will be held today, from noon-1 p.m., in the Bldg. 361 auditorium. Cynthia Hill, consultant and trainer, will discuss the causes and symptoms of stress, and present relaxation techniques for stress management. Hill is a seasoned marketing professional and senior consultant at Hill and Company Communications. She also is a trainer for Concern: EAP, presenting to many of the top technology companies in the Silicon Valley. The health and fitness workshop series is sponsored by the WorkLife Center, Health Services Department, Employee Assistance Program, LLESA and Concern: EAP. The series complements Body Challenge, LLESA’s on-site exercise and health incentive program. The programs are open to employees; no registration is required. For information, contact, 2-9543.

...

Supervisor briefings to review the 2005 **Performance Appraisal program**, process and form changes will be held in Bldg. 361, room 1140 beginning today. Dates and times are listed below. Registration not required. Come early to reserve your seat.

Date	Time
April 6	9-10:30 a.m.
April 7	9-10:30 a.m. or 2:30-4 p.m.
April 8	9-10:30 a.m. or 2:30-4 p.m.

Up
&
Coming

Pleasanton’s Museum on Main Street is sponsoring a **“Days of Wine and History Wine Tour”** fund-raiser to benefit the museum on Saturday, April 9. Participants will meet at 11 a.m. at the Museum and return at 5 p.m. Explore the wine country on tours of Thomas Coyne, Wente Vineyards Estate and Fenestra Wineries. Learn about interesting historical sites and fascinating Tri-Valley history. The tour promises to be a fun outing for singles, couples and friends. The cost is \$50 per person and only 42 seats are available. This donation to the Museum On Main Street includes, a box lunch, bottled water, wine tasting and transportation. Purchases can be made at the Museum On Main Street, 603 Main Street, Pleasanton. For more information, contact (925) 462-2766, or valley-museum@sbcglobal.net.

...

Pleasanton Playhouse continues their 21st season of main stage musicals at the Amador Theatre, 1155 Santa Rita Road, Pleasanton, with the legendary classic tale, “Camelot.” Performances and times are: April 22, 23, 24, 29, 30; May 1, 6, 7, and 8; Fri. and Sat. at 8 p.m.; Sun at 2 p.m. Adults-\$28, seniors over 60-\$26, and juniors under 18-\$20. Substantial discounts given to groups of 20 or more. To order tickets, call (925) 462-2121 or order online at www.pleasanton-playhouse.com.

RETIREES’ CORNER

In February, **Al Pickford** (Mechanical Engineering NEED, 1995) and his wife attended the opening of the Atomic Testing Museum in Las Vegas. The museum is part of the NTS Historical Foundation. Troy Wade, a former Laboratory employee, is president. They were joined by Dave and Marian Holten. At the opening ceremony, they visited with old friends Joe Behne and Ed Hanson, had a few minutes with John Foster remembering the outdoor testing times, and Ron Cochran of the present LLNL administration. The Pickfords now reside in Junction City, Ore.

Edgar (Chemistry Test, 1993) and **Janet Peck** did a great deal of traveling in 2004 including an Alaskan cruise. They sailed on a new sternwheeler with only 215 passengers. Edgar recently retired from his part-time 20-month position as bereavement chaplain, but still fills in preaching when pastors in the area are absent. Janet still volunteers two mornings a week tutoring first graders. They are both active in their church and Edgar has been reelected as a church elder. Their e-mail address is: edgarpeck@yahoo.com.

Gordon (B Division, 1989) and **Nancy Repp** took a trip to Antarctica in 2004. They toured Buenos Aries, then flew to the southernmost city in the world, Ushuaia, Tierra del Fuego, to board their ship, the Marco Polo (550 passengers - the largest ship they have been on). They had a rough trip crossing the Drake’s Passage, and then took Zodiac trips ashore to walk amongst the penguins. They saw very impressive glacier and rock formations going through various straights and channels in the freezing cold on deck. The trip back through the Drake’s Passage and Cape Horn was much calmer.

Don Stiles (Electronic Engineering, 1988) just returned from a trip to Southern Africa. He spent several

days on safari to six different national parks in South Africa, Botswana, Namibia, and Zimbabwe. Among the animals he saw were: a rhinoceros, lion, leopard, hippopotamus and Cape buffalo along with dozens of other animals and birds. One highlight was a flight in an ultralight airplane over Victoria Falls, getting an aerial view of the area as well as the falls. He spent time in Johannesburg and Cape Town and visited a huge penguin colony at the southwestern most point in Africa.

Another **Cal** (Physics, 1993) and **Dixie Wood** (Engineering, 1993) travels segment. They’ve had some wonderful unexpected times — like when they were in Paris and happened onto a stunning organ concert in the magnificent Notre Dame Cathedral. The cathedral, an austere and imposing stone structure, was unbelievably warm and vibrant, filled with people, flowers and mega-sized candles.

The **Travel Group** will meet Tuesday, April 26, at 2 p.m. in the Community Room of the Livermore Police building, 1110 S. Livermore Ave. The topic is “It’s a Digital World: All You Need To Know To Take and Show Great Pictures,” by Margo and Arne Kirkewoog. They will include photos of the Pacific Coast.

The **retiree luncheon** for April will be held at noon on Wednesday, April 20, at the Elks Lodge in Livermore, 940 Larkspur Drive. (Reservations: www.llnlretirees.org). Our speaker will be John Rusmisl of the Alameda Country Mosquito Abatement District. The title of his presentation is: “West Nile Virus Surveillance and Control Strategies for Alameda County.”

Please send any input to Jane or Gus Olson. E-Mail: AugustO@aol.com or JaneRubert@aol.com. Phone: (925) 443-4349, snail mail address: 493 Joyce Street, Livermore, CA 94550.

IN MEMORIAM

Gerald S. “Gary” Bradley

Gerald S. “Gary” Bradley died March 23 at Valley Care Hospital in Pleasanton. Bradley was born in Corona, Calif. on Feb. 16, 1939.

In his youth, Bradley was an accomplished competitive skater having won national awards. After college, he flew in the U.S. Air Force Cadet Program. Bradley met his wife at Lake Tahoe while he was working as a skating instructor at Squaw Valley the summer following the 1960 Olympic Games. They married and lived in Stockton, Calif. and then Los Angeles.

In 1966, he moved with his family to Livermore and worked as an engineering associate at the Lab. He

retired from LLNL in 1993 and in his retirement he enjoyed genealogy, traveling, reading and spending time with his family.

Bradley was preceded in death by his father, mother and sister. He is survived by his wife of 44 years, Judy; his sons Keith (Alison) of Livermore, and Steven (Jill) of Livermore; and four grandchildren, Chelsea, Trevor, Tanya and Weston.

Services will be private. Contributions may be made to the Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021; <http://www.mskcc.org/>.

Thomas “Tom” Duncan

Thomas Duncan, a Manteca resident for eight years, died March 24 at home. He was 74.

Born Dec. 18, 1930, in Berkeley, Duncan lived in Dublin for 40 years before moving to Manteca.

Duncan retired from AT&T and the Lab, where he worked as a telephone technician for 40 years.

He belonged to the Masons of Livermore. He was an avid Sacramento Kings fan and a NASCAR car collector. He loved jazz and blues music, NASCAR racing, swimming and working in his yard. He also enjoyed traveling, especially going on cruises. He liked meeting with his AT&T buddies to socialize. Watching his grandson play baseball was another favorite pastime.

He is survived by his wife of 24 years, Joy Duncan of Manteca; his children, Steven Duncan of Livermore; Tari Harvey and her husband, Mark, of Australia; Lisa Duncan of Hanford; Daryl Morton of Stockton; Traci Bailey and her husband, Frank, of Manteca and David Morton and his wife, Laurie, of San Martin; his brother, Jerry Duncan of Milwaukee, Okla.; his sister, Charlene Bohling of Milwaukee, Okla.; eight grandchildren and nine great-grandchildren.

Services were held. Donations may be made to any Catholic charity.

Newsline

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Valuable documents in Archives & Research Center

By Linda Lucchetti
NEWSLINE STAFF WRITER

If you are looking for historical Lab documents or if you possess documents that are important to Lab history, go to the ARC – the Lab’s Archives and Research Center in Bldg. 439, managed by archivist Maxine Trost.

There, in a comfortable, remodeled library-like setting equipped with methods for easy record retrieval, you may either unearth the information you seek, or find just the place for long term management of documents — documents that might someday prove precious to Lab posterity.

Trost believes that many Lab employees are already aware of what the center has to offer. “We receive the typical requests for photographs and posters,” she said. “But some may not know the extent of material available.”

Trost encourages Lab scientists to use the facility to provide background and information for their research. “There is much scientific information accessible here,” Trost said, “information about past decisions and scientific data that could aid current decision making.”

While the ARC has a clean and professional “library” look, Trost draws a clear distinction between a library and an archives center. Go to the library for published books and reports, but come to the archives for unique items, early unpublished papers from projects, and old records and photographs.

For instance, at the ARC you might find former Lab Director Roger Batzel’s notes describing Lab management or documentation on how an early project was planned.

Trost is happy to receive positive comments from previous ARC users. Two such clients — each one unique in project and research needs — attest to the value and importance of their recent ARC visits.

Historical research

Colleen Beck, archeologist and research professor at the Desert Research Institute in Las Vegas, Nev., is currently contracted to lead a project for the Department of Energy, National Nuclear Security Administration’s Nevada Site Office. The project deals with the history of the Plowshare Program, an Atomic Energy Commission program that studied the use of nuclear explosives for peaceful construction purposes and industrial applications. The history project focuses on compiling an overview of all domestic Plowshare projects executed or proposed for execution outside the Nevada Test Site in order to evaluate the historic context for each. From the late 1950s into the 1970s, LLNL was the principal laboratory providing the technical direction for the Plowshare Program and, thus, related archived documents are found in the ARC. Beck has made several trips to LLNL with colleagues for the very purpose of visiting the ARC, searching for pertinent documents and information. To date, they have reviewed more than 5,000 records in the repository,” Beck said,

“We were able to find information here that doesn’t exist elsewhere, such as letters, memos, budgets, trip itineraries, even meeting notes, and, most importantly, details on project activities,” Beck said. She was surprised by the extent of the materials archived related to the Plowshare Program. “The Plowshare records at the ARC are better organized than anywhere else, making our research much easier and more productive than anticipated,” she said.

Beck concludes that the ARC archivist and staff made every effort to facilitate and assist them with their research.

Scientific and safety-related research

Paul Corrado is an information manager for the Lab’s Space Action Team, which is responsible for identifying potential hazards associated with the deconstruction of LLNL facilities. He and the team

What you should know before you go

LLNL Archives and Research Center (ARC)

Location: Bldg. 439

Access: The ARC is in a limited area.

Q-clearance is required for access.

write close-out reports, summarize facility demolition data and prepare building information for preservation.

Corrado stated that the Space Action Team has an on-going, two-fold relationship with ARC. “We use the archive information to identify potential hazards associated with facilities that we plan to deconstruct, and we also archive facility information after the project is completed, complying with federal requirements,” he said.

Corrado cites safety as an important reason for using the archives. “To be sure no one is injured during a deconstruction, we go to the archives to be made aware of potential hazards,” Corrado stated.

A good example is the recent deconstruction of Bldg. 222. “There was a great deal of information in the archives about the programs that worked in that facility and what science and technology issues we might encounter during the demolition,” Corrado said. “The center helped make information available on both the use of the facility and the potential contaminants and hazards. It also provides a permanent repository for records that must be kept associated with the demolition work.”

Corrado said that he and his team were constantly finding “gems”— information and photos that can make the deconstruction of facilities safe for Lab workers and help better plan for the waste stream they would encounter.

“The Space Action Team is happy to be partners with the ARC, to be sure both the federal requirements are followed with respect to hazard facility research and that the Space Action Team archived information is readily available,” Corrado said.

IPAC can help bring your ideas, inventions to the marketplace

Got an invention? A new technology? A great idea for a new way to accomplish an old task?

The Laboratory’s Industrial Partnerships and Commercialization Office (IPAC) wants to help you protect that invention or idea and bring it to fruition.

Many Laboratory inventions find their way to the commercial marketplace, either through collaborative research with industrial partners or license agreements, earning revenues for both the Laboratory and the inventors. But the path from

idea to commercial product can be tricky, involving complex contractual and intellectual property issues.

To help the Lab’s inventors and principal investigators negotiate that path, IPAC has prepared a series of one-page fliers that provide information and clarification about the roles and responsibilities — and the pros and cons — of various contractual arrangements. Each flier covers a single topic related to industrial partnering and technology trans-

fer, including such subjects as patent protection, conflict of interest, records of invention, copyright, R&D funding resources and license agreements.

One or more of the fliers will be highlighted each month in *NewsOnLine* and the entire series is posted on the IPAC Website at <http://www-r.llnl.gov/IPandC/emp/>. Future fliers will be developed to address topics or questions as they are raised. To suggest a topic, send an e-mail to LaTonna Wilson at wilson102@llnl.gov.



DAVID SCHWOEGLER/NEWSLINE

Good Friday demonstration

Arrested demonstrators surrender their property prior to transportation to temporary booking facilities at the Sunshine Building during the annual Good Friday demonstration on March 25. This year’s demonstration attracted 250 activists and produced 70 arrests for blocking a public roadway. Arrestees traveled from as far as Sarasota, Fla., but none were from Livermore.

Following a warrant check and proof of identity, all were cited and released. The Alameda County Sheriff’s Office, Livermore Police Department, California Highway Patrol, and Sandia security officers assisted Lab Security police officers with traffic control, crowd control, arrests and booking.



NEWS YOU CAN USE

Agreement to help shut Russian reactor

Washington D.C. — Canadian Foreign Affairs Minister Pierre Pettigrew and U.S. Secretary of Energy Samuel Bodman on Wednesday announced the signing of a memorandum of understanding (MOU) to assist with the permanent closure of one of the final operating weapons-grade plutonium production reactors in Russia.

Under the MOU, Canada will contribute \$9 million Canadian (U.S. \$7 million) to the U.S. Department of Energy’s Elimination of Weapons-Grade Plutonium Production (EWGPP) program. The Canadian contribution to this initiative is part of its \$1 billion pledge under the G8-led Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.

The goal of the EWGPP program is to permanently shut down three Russian nuclear reactors and replace them with fossil energy plants. These reactors, which provide necessary heat and electricity to two regions in Siberia, also generate a significant amount of plutonium that could be used to make nuclear weapons. The Russian government has agreed to permanently shut down the

reactors once replacement energy is provided.

“This agreement is key to halting the production of nuclear weapons materials,” Pettigrew said. “We are pleased to be able to cooperate with our U.S. partners on this important security initiative.”

“Ending the production of weapons-grade plutonium is a non-proliferation priority for the United States and the international community,” Bodman said. “The signing of this MOU with our Canadian partners is another key step toward meeting this priority.”

The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction is a critical initiative for preventing terrorism relating to weapons of mass destruction. Canada is currently contributing to projects in all four of its priority areas: dismantlement of nuclear submarines; destruction of chemical weapons; re-employment of former weapons scientists; and disposition of fissile materials. The United States pledges approximately \$1 billion annually for activities under the partnership.

Employee Assistance Program can lend timely support to victims of depression

Feeling sad, blue, or hopeless? Lost interest in things you used to enjoy? Decreased job performance or productivity? Increasingly irritable with co-workers or family? Difficulty concentrating or making decisions?

Unfortunately many depressed people suffer needlessly because they feel embarrassed, fear being perceived as weak, or do not recognize depression as a treatable illness. The key is to recognize the symptoms of depression and seek appropriate treatment.

The Employee Assistance Program (EAP) offers an on-site, convenient support group which will provide a safe environment to share experiences, learn from others who may have the same symptoms as you, and develop adaptive coping strategies. For more information, contact Gyll Turteltaub, 3-6608, or turteltaub3@llnl.gov.

Did you know?
It is illegal to operate a cellular phone in Q-cleared areas.

Technical Meeting Calendar

Friday
1

ELECTRONICS ENGINEERING TECHNOLOGIES DIVISION

“Design, Fabrication, and Integration of a Hybrid Micro Power System that includes a Micro Fuel Cell,” by André D.

Taylor. 10 a.m. Bldg. 153, room 2010. Classification of location: P. Contact: Becka Gordon, 2-2199.

INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS

“Infrared Dark Clouds: The Earliest Stage of Massive Star Formation,” by Jim Jackson, Boston University. Noon, Bldg. 319, room 205. Property protection area. Foreign national temporary building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

Monday
4

CHEMICAL BIOLOGY AND NUCLEAR SCIENCE/ BIOSECURITY & NANOSCIENCES LABORATORY

“Assembly and Integration of Functional Carbon Nanotube Structures,” by Soojin Oh, postdoctoral applicant, University of North Carolina. 2 p.m., Bldg. 151, room 1209, Stevenson Room. Foreign nationals may attend if approved plan is on file, which includes Bldg. 151. Contact: Kathy Ricard, 3-8024, or Chris Orme, 3-9509.

T&Wed
5,6

MICROSENSORS WORKSHOP 2005

Hosted by Tony Lavietes, Electronics Engineering, 8 a.m. –4 p.m., Bldg. 111, room 114. This two-day classified workshop is open only to attendees who hold Q-clearances

with Sigmas 1-3. More information available on the Web at <http://www.llnl.gov/sensorsworkshop>, Contact: Tony Lavietes, 3-6766, or Lei Loni Bush, 2-0654.

Tuesday
5

HAZARDS CONTROL DEPARTMENT

“Aerosol Working Group Meeting,” by Werner Bergman, Hazards Control Department. 10 a.m., Bldg.

123, conference room A. Anyone interested in networking with researchers working on aerosols is invited to attend. Property protection area. Foreign national temporary building access procedures apply. Contact: Werner Bergman, 2-5227. (Note that in last week’s *Newsline* the day listed was incorrect.)

PHYSICS & ADVANCED TECHNOLOGIES DIRECTORATE

“The Physics of Fusion Energy: Why We (Probably) Can’t Build a Reactor on the Head of a Pin,” by L. John Perkins, Fusion Energy Program. 2 p.m., Bldg. 123, auditorium. Common Use Facility. Foreign nationals may attend. Contact: Alan J. Wootton, 2-6533. (Note that in last week’s *Newsline* the day listed was incorrect.)

Thursday
7

PHYSICS & ADVANCED TECHNOLOGIES/I DIVISION

“Multilayer-coated EUV Telescopes for the Atmospheric Imaging Assembly Instrument Aboard NASA’s

Solar Dynamics Observatory,” by Regina Soufli. 1 p.m., Bldg. 155, room 1101. Property protection area. Foreign national temporary building access procedures apply. Contact: Robin Sachau, 2-6300.

Friday
8

INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

“First Scattered Light Images of Nearby Debris Disks and

Evidence for Extrasolar Planets,” by Paul Kalas, U.C. Berkeley. Noon, Bldg. 319, room 205. Property protection area. Foreign national temporary building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa A. Lopez, 3-0250.

Friday
15

INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

“Formation and Evolution of Massive Galaxies,” by Patrick

McCarthy, Carnegie Observatories. Noon. Bldg. 319, room 205. Property protection area. Foreign national temporary building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

Friday
22

INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

“Polarimetry, Circumstellar Disks, and Clusters in the Magellanic Clouds,” by Karen

Bjorkman, University of Toledo. Noon, Bldg. 319, room 205. Property protection area. Foreign national temporary building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

The deadline for the next Technical Meeting Calendar is noon, Wednesday.

Rules of the road for two- and four-wheel vehicles

By Scott Wilson

NEWSLINE STAFF WRITER

With the arrival of better weather and the increased presence of cyclists on area roads, the California Highway Patrol (CHP) is reminding local businesses of road safety regulations.

Tesla, Greenville and other area rural roads are heavily utilized by local residents and daily commuters, and also are very popular with recreational cyclists. Observing applicable vehicle codes and practicing roadway courtesy can help assure that outings on these roads are pleasant and safe for vehicle drivers and cyclists alike.

Bicycles and vehicles follow essentially the same rules of the road. That includes laws governing such things as traffic direction, observance of road signs, speed limits and turning maneuvers.

The CHP is the agency primarily responsible for patrolling and enforcing the laws governing county roads in eastern Alameda County. CHP Officer John Soto advises vehicle drivers and cyclists to exercise caution when using rural roads.

“Some basic points to remember are be courteous of everyone around you,” he said. “If you decide to pass another driver, cyclist, or equestrian, do so at the posted speed limit and only if you have a legal, clear and safe route ahead. Cyclists should maintain single-file for-



JACQUELINE MCBRIDE/NEWSLINE

Obeying rules of the road is a matter of safety.

mation, except when passing slower travelers ahead of them, and when approached by a vehicle from behind, should move as far to the right

How to avoid cycle accidents

Some of the most common causes of bicycle accidents are:

- Vehicle driver making an unsafe left or right turn.
- Bicyclist riding from driveway or sidewalk into the path of a vehicle.
- Bicyclist using the wrong side of the road.
- Vehicle driver opening a door as bicycle passes.
- Bicyclist making an unsafe left turn.
- Bicyclist weaving, or leaving the edge of the road or bike lane.

COURTESY: SAFEGUARDS AND SECURITY DEPT.

of the roadway as can be done safely.”

Soto emphasized that “the most important outcome is safety for everyone on these roads.”

To learn more about the California Vehicle Code, as well as the laws governing bicycle use (VC Sections 21200-21212), go to www.leginfo.ca.gov.

To contact Alameda County with suggestions or concerns about the rural roads in eastern Alameda County, call the county Maintenance and Operations office in Dublin at 925-803-7007.

BISHOP

Continued from page 1

much different than food chemistry,” Bishop said of her career.

Whereas Bishop once studied the chemical makeup of foods and their effects on the environment of the human body, Bishop forged a career out of studying the makeup of various contaminants and their effects on the Lab’s surrounding environs. All that came to a close Thursday, when Bishop retired.

“I’ve had a wonderful time here at the Lab,” she said. “I’ve met lots of interesting and innovative people. This has been my extended family and I will miss the stimulation.”

Those same sentiments are echoed by her colleagues.

“Dorothy will be missed on so many levels,” said Ellen Raber, department head for Environmental Protection. “She has been an excellent scientist and she has worked tirelessly to make the Lab a better place for her peers. I have valued working with Dorothy over the years and will miss her advice and support.”

“Dorothy has always been very people-oriented,” added Tina Carlsen, group leader of the Environmental Chemistry and Biology Group in the Environmental Protection Department, a position Bishop held on an interim basis until Carlsen was recently named. Carlsen has known Bishop since they began working together in 1991.

“Dorothy always looked out for other people,” she said. “She takes a personal interest in everyone she works with and she wants to do whatever she can. She’s often looked upon as mom.”

Bishop had been mulling over retirement for just over a year but says the decision became clear after becoming a first-time grandparent. Her grandson, Markus, was born seven weeks ago and she looks forward to spending some of her days taking care of the infant as her daughter balances roles as mother and scientist.

“I know what she is going through,” Bishop said.

In between baby sitting, Bishop plans on doing some traveling with her own mother, tinkering in the garden and “whatever I want.”

Bishop spent her entire career at the Lab working in environmental chemistry. Hired part-time in 1974 as part of a Lab effort to bolster its corps of



JACQUELINE MCBRIDE/NEWSLINE

Dorothy Bishop

women scientists and engineers, Bishop eventually found full-time work with the Lab’s project to study the effects of nuclear power plants, located near coastal waters, on marine biota.

She recalls tanks of marine life kept at the Lab, including a shark called Puck, and laughs at the memory of running to the labs shortly after the 1980 earthquake to rescue the fish that had been thrown from their tanks by the temblor.

The program eventually shut down at about the same time Bishop was being recruited into the newly formed Environmental Protection Department. In 1987, shortly after the Lab had been declared a Superfund site, studies were needed on underground contamination. Bishop took on the job and officially joined EPD in 1991.

Since that time she has led and actively participated in a large number of projects principally focused on fate and transport of underground contaminants. She has taken on a variety of positions within the department, including group leader, program development leader and associate division leader.

Yet Bishop is known as much for her work in career development and outreach as she is for her scientific career. She constantly recruited college students to assist her with laboratory work, and she has been a leader and supporter in science outreach activities such as Expanding Your Horizons, Science on Saturday, the Teller Institute and

“Dinner With a Scientist.”

“We need to get more kids in science and engineering,” Bishop said. “We cannot do that if we do not provide opportunities to see how exciting these fields can be.”

In 1997, Bishop introduced herself to Congresswoman Ellen Tauscher and touched off a series of meetings on women scientists and the issues they face, from career development to work-life balance. During those meetings, Tauscher requested input for the newly formed Commission on the Advancement of Women and Minorities in Science, Engineering and Technology, or CAWM-SET. The makeup of the commission included no one from the Bay Area and Tauscher suggested a one-day forum of Bay Area women scientists and engineers to generate and provide input to CAWM-SET.

The first forum was held in 1999 and was so successful two successive forums were held, in New Mexico in 2002 and in Berkeley in 2004.

Bishop recalls the first meeting and the momentum the women felt after attending. The group met routinely with management selection committees to devise ways to encourage a more diverse selection pool (they even recommended Dona Crawford, one of the speakers at the first forum as a candidate for Computation associate director), provided input into the 2001 employee survey and strongly encouraged alternative work schedules such as 9/80 workweeks.

“I think we’re all obligated to try to make this Lab a better workplace,” Bishop said of the group’s efforts. Yet she credits Director Michael Anastasio and Executive Officer Ron Cochran “for maintaining a dialogue with our group and being receptive to our ideas.”

“Dorothy has a genuine concern for everyone,” said Jesse Yow, Environmental Restoration Division leader, a longtime friend and colleague. “It doesn’t matter whether she knows you or where you stand in the food chain.”

“With Dorothy it has never been a question of why she should do something, it’s always been ‘why not?’”

Carlsen says the Lab will lose a huge resource now that Bishop is moving on. “She’s got a rolodex that won’t quit. She’s always been good at pulling teams from the Lab together, tapping into their potential and maximizing their strengths, then turning to the outside to complement the team. Her ability to do that will be a big loss.”



CLASSIFIED ADS

See complete classified ad listings at
<https://www-ais.llnl.gov/newsline/ads/>

AUTOMOBILES

1998 - TOYOTA 4-RUNNER Limited, 84K miles, see vehicle. Excellent condition. \$15,250 obo. 925-447-1797

2003 - fully loaded ford explorer eddie bauer 16,000 miles.call terry 209-839-6569

1947 - Willys Jeep. Stock with extras. In good running condition. Price 3,000 925-373-6651

2002 - JEEP Grand Cherokee-Ltd/Overland, V*, 49.5K miles, Onyx Green, Pwr Everything, Excellent Cond, Extra Accessories, New Tires, 06 tags. 925-371-0632

1999 - Honda Accord LX Sedan. Leather, moon roof, loaded, new tires, V6. Excellent condition. 66K miles. Asking \$10.5K. Mast see and make offer! 925-373-6833

1996 - Lexus LS-400, two tone champagne & leather, moon roof, air, chrome alloys, dual memory seat & climate control. Immaculate inside and out. \$12,750 925-634-8523

1965 - Summertime Yellow Mustang(Original Color) Black interior. Excellent condition, runs great, Factory a/c, rare bench seat, 289 V8, no rust, 10k obo 209-823-3848

1986 - Porsche 944 Turbo, pearl white, burgundy interior, 191k miles, excellent maintenance, \$5,000 or best offer. 510-236-6569

2003 - Corvette conv-Immaculate! Metallic grey w/blk top, blk leather int., fully loaded, incl. extended warr., 5,300mi., \$43K OBO 209-836-4613

1999 - Ford Explorer, Eddie Bauer Edition, 57,000 mi. excellent cond. \$14,000 obo 925-447-9353

1983 - GMC Diesel Blazer,Good tires,Runs Good!\$1200. 925-455-4550

1992 - GMC TYPHOON, V-6 turbo, new ball joints, bushings, alignment, adopt me for thousands below book value: first \$10,500 takes it home. 925-455-6174

AUTOMOBILE ACCESSORIES

Chevy/GMC Truck Bed 73 thru 82 Short Fleetside Fair Cond. B/O 925-455-6886

Red Fiberglass camper shell for 1998 ford F150 extra cab short bed, insulated tinted windows rear light 400.00 209-531-1330

1985 - Wheels, 15x10, white steel spoke, could be painted to look just like Rock Crawlers, GM 6 lug pattern, come with worn out tires. \$120 408-712-1730

BICYCLES

Race frame. Custom frame and fork. 56cm. Custom ,intense lime green paint job. Columbus tubing. Beautiful! \$75 925-373-6255

BOATS

1977 Islander 28. Diesel, wind vein, auto pilot, GPS plotter, BBQ, sea anchor, 4 sails, 1 spinakker. Asking \$18,000/OBO 925-373-6450

GIVEAWAY

Give away brown 4 pc. sectional sofa w/sleeper, and oak and glass coffee table. 209-830-0435

Large lot of untested 72 pin simms and dimms, cpus including celeron 433, misc. pci and isa cards, 486 laptop with issues. Take all or part. 209-327-0012

Maytag washer & Dryer (electric) in good working order. Best price yet! 925-449-4494

ELECTRONIC EQUIPMENT

Portable convection heater, Black & Decker, 2 heat settings and fan setting, new in box. 25 inches long by 17 inches

high. Paid \$60 plus tax. \$40 925-648-0671

17 in. CRT monitor, works great, photos available. \$50 obo 925-462-3995

HP COLOR printer, like new, hardly used.We have too many. 30.00 510-537-7222

Epson Stylus Color Photo Printer R300 w/3 yr warranty (\$200). Will take \$150/BO. Never taken out of box. 925-373-0247

DVD player. Kenwood brand. Mint condition. \$50 925-373-6255

Playstation 2 game Dragon Ball Z: Sagas, brand new, only used once. Reg \$50, sell for \$40. 925-292-0348

Oak computer desk, sliding shelves for printer, etc., approx 40x24x30. Excellent condition. \$50 925-606-0234

Dell speakers/subwolfer, black, like new, \$50 new. \$25/BO. 925-373-0247

HOUSEHOLD

California King Oak Bedroom Set. Mission Style headboard/footboard, two nightstands, dresser. Excellent condition. Pictures available. \$500 OBO 925-454-0825

Fireplace screen, gunmetal gray wrought iron, 31 inch high by 51 1/24 inch wide. Paid \$60 plus tax. New in unopened box. \$35. 925-648-0671

Baby Crib for sale \$50.00 925-625-3490

Furniture: couch and a soft chair with matching ottoman. Photos available. \$150/couch, \$75/chair 925-462-3995

Bar Stools (2), Like new, used only 3 months. Oak wood with beige plaid upholstery. Cost \$400 each, will sell for \$200 each or best offer. 925-443-4349

Queen size futon in great shape. Cover has light background with multicolors on it. Paid \$300.00 for mattress. Asking \$150.00 or make offer. 925-606-0722

Karastan Persian-style carpet. Color: soft red / blue, approx. 10x14 . Excellent condition. In Walnut Creek. \$495. Evenings call: 925-947-1454

For sale 19 cu. ft. Almond GE refrigerator.\$100. Evenings 209-830-0435

Whirlpool Duet electric dryer. 1-year old, excellent condition. Energy Star, front load, x-large capacity, stackable. New value \$900, selling \$500. 510-351-0969

Love Seat. Floral print - earth tones (mainly beige & taupe, some burgundy) Excellent Condition \$150 209-835-6087

Bar stools - pool table chairs, 2-solid oak w/embroider fabric back & cushion. Very nice quality. \$200 for both. Call 925-455-8526

Oak entertainment/wall unit w/glass doors \$850.00 6 piece bedroom-pedestal w/drawers, carved headboard, tables, chests, dresser \$600.00. 209-833-3896

Kenmore refrigerator w/ice maker attachment, 20 cu ft, almond, 16 yrs old, runs great. \$70.00 209-830-7978

Solid oak Roll Top desk w/locking top. Excellent cond. Paid \$1200, sell for \$500 925-516-8339

LOST & FOUND

LOST. Gold braided bangle bracelet with Clauddagh. Sentimental value, anniversary gift. Lost on St. Patricks Day. 925-413-2196

Prescription reading glasses, in a hard case, with a blue cleaning cloth inside. 209-475-0405

MISCELLANEOUS

Marriott Manhattan Beach, CA gift certificate. No expiration date. Valid for one night stay and includes lodging tax. Paid \$120. \$75 925-648-0671

Easy Bake Oven and Snack Center by Hasbro for child. Brand new in

unopened box. Paid \$25 plus tax. Great gift. \$15 925-648-0671

Above Ground Pool 17x30x4 w/ all accessories Asking \$2,000.00. Buyer to pick up and haul away. 925-373-6651

ABBA FANS. 4 CD set, limited edition collection. Includes book giving ABBA history. Excellent cond. 15.00. 510-537-7222

Tickets for Oak A's vs Angels Sat 4/16 or Sun 4/17 3rd base line MVP Sec 125 Row 13 Seats 1&2 \$30/each 925-449-5481

ZyXEL Prestige 645 ADSL modem/router, new, used for a short time with AT&T, includes AT&T DSL software install CD. \$25 925-373-0247

INDY 500 TICKETS Five PENTHOUSE Stand A tickets. BEST SEATS @ INDY. Outside track on front straight-a-way. Garage passes included. \$760/OBO 925-784-4263

TUXEDO, size 38, with shawl collar, trousers 36/31, \$45. Also trousers size 36/31, \$15. Some accessories available. 925-447-3809

Graco double stroller (inline). Evenflo stroller/car seat/carrier combo. Good cond. each used about a year. \$25 each 209-365-0412

MOTORCYCLES

2004 - Motorcycle helmet, HJC CS-10, white, large, full face with shield, DOT approved, new never used, with tags, originally paid \$100. \$50 925-462-0468

1970 - Honda Trail 70 4800 miles good cond runs great everthing works, great for camping blue in color folding handlebars street legal 800.00 209-531-1330

MUSIC INSTRUMENTS

Acoustic Guitar. Yamaha F35. Excellent beginners guitar, like new. Many accessories. Price includes Dean Markley ProMag soundhole pickup. \$125obo 925-963-1227

Drum pedal. Gibraltar brand. Good condition. \$25 925-980-7532

PETS & SUPPLIES

South African Boerboel puppies 2 females mastiff type dog all shots and ready to go to a new home. Photos availalble. 209-845-2584

1 male and 1 female adult redtailed boas. Good handlers, friendly, healthy. One large enclosure included. \$500 obo. 925-447-6942

Black Labrador AKC PUPS.9weeks old vet check \$400.00 #00811 925-447-3912

Free guinea pig with cage to a good home. 510-520-9193

8x8 dog cage kennel used once \$45.00 925-449-7068

2 Ponies to good home must go together 1 Mare 3yrs Green broke 1 Gelding 5yrs broke, call for more info after 6pm 209-834-8043

Consider saving lives by providing temporary foster care for homeless puppies and kittens. Please call if interested. Thank you 925-980-3035

Birdcages. One white wire, lightweight, 2ft cube, great \$10. One custom oak and mesh, 1.5x3x3 ft, built in pedestal with storage, fair, free. 925-606-9575

Must sell adorable Yorkshire CKC puppies, 12wks male \$850 female \$950 OBO 1yr guarantee. Have had all shots/worming 209-612-4301 209-346-3013

RECREATION EQUIPMENT

Olympic bench. Heavy duty,flat only, weight bench. Unused!! \$150 obo. 925-980-7532

Dumbell weight bench. Ironman series.Flat/incline/decline with arm curl

and leg curl. Unused,in box! \$175 925-373-6255

Jeep Wrangler Sahara look. Good condition, only 72K mi. CD deck, Lots of chrome and stainless steel. \$7900 OBO 925-443-6014

1999 Fleetwood Jamboree 22ft class C motorhome, Ford V10, sleeps 6, awning, shower, bathroom, microwave, TV. very cleen, runs like new. \$27K/obo 209-892-5734

Backyard trampoline. Good condition. \$25 925-455-4559

Skis with bindings Elan 167cm, Fisher 157cm, \$30 each pair. 415-519-6186

1972 Jeep CJ-5 lifted, engine solid, smog-exempt, needs body work. \$1950/OBO. 209-456-6947

ALUMINUM BOAT 12 footV hull game fisher, electric trolling motor, marine battery, charger,anchor, some accessories. \$450.00 after 3 p.m. 209-956-9015

2000 21 Ft. Wilderness Hybrid trailer, front and rear pop outs, sleeps 7, full kitchen and dinette, ultra lite \$8,900 925-455-8222

Tuff Stuff Odyssey 5 Total Body Home Gym. \$500 925-454-8982

Rollerblades, Mens size 11, Womens size 8, both in great condition. Includes knee guards and wrist guards. \$50 each pair, \$85 for both pairs. 925-998-5702

Weider Crossbow exercise machine. Like new. \$250.00 obo 209-836-2990

RIDESHARING

Express your commute, call 2-RIDE for more information or visit <http://www-r.llnl.gov/tsmp>.

Modesto - Working 4-10s and looking for a vanpool? We have a space available 4/1. We work 6am to 4:30pm Mon. thru Fri. 209-667-2365, ext. 2-8321

Martinez/PH - Looking for a 4th member of carpool. Arrive 7:30 Leave 4:30. Meets in Mtz. Will consider PH pickup. Call Paul 925-228-3759, ext. 3-7857

SERVICES

Construction services, licensed general contractor, remodels, room additions, all phases of construction. Free estimates. 925-570-0553

General Contractor/Lic#848050. Large and small projects. Looking for quality and reliability? Call BHB Enterprises. 209-814-2763

QUALITY PAINTING, take advantage of low season discounts. Excellent references, prep work and workmanship. 25 yrs exp. Call before it gets too hot. 510-537-7222

Photo and video services. B-day parties, Sporting events, etc. 510-506-1728

Margarita/Slushie Machine for rent, Lab discount. Best prices around. 209-481-5442

Landscaping & Concrete services. Work in valley and bay area. Free estimates. Licensed and insured. 209-740-8109

Exquisite murals, faux finishing, Trompe L oeil, decorative painting, 3D bricks, and childrens fantasy rooms. 925-461-5045

Looking for daycare for your infant or toddler? - or afterschool care for your elementary aged child? 925-456-7172

SHARED HOUSING

Discovery Bay - Water view Master Bedroom for rent. Full use of deep water home with brand new kitchen. \$600 + 1/2 utilities. Prefer Non-Smoker 925-634-8523

Pleasanton - - Nice girls (incl. my 21 yr old daughter) renting nice house, seeking two more nice girls to fill the ranks. Call days: 925-251-9990

Livermore - 1 bedroom, 1 bath, Family room, patio room. 12 miles up Mines Rd.

\$1000 month plus cleanup deposit. 925-447-1509

Tracy - Lg Room for rent w/ possib 2ed room. Grantline & Corrol Hollow Near freeway/Mall, \$475+ utilities/mo-Full Kitchen/Laundry privilages-Private Bath 209-612-2840

Livermore - - Share 4 Bdrm/2Ba home with one other person on W. side of town. Kitchen/Laundry priv., no pets/smoking. \$550 month + 1/2 utilities & deposit. 925-294-8765

Livermore - Studio Cottage in Downtown Livermore w/ full bath & kitchenette. Professional no-smoking individual. No animals. \$750 which includes utilities. 925-784-9110

Livermore - Room to rent in a clean house for a female. Close to lab. No pets/no smoking. \$600/month including utility. Deposit. Available immediately. 925-606-5660

Pleasanton - \$700 a month room for rent, full private bath, walk in closet, luxury town home, no smokers 925-461-5045

Mountain House - 15 miles to LLNL, Brand New, Single Room, small kitchen, full bath, separate entry and mail box, no laundry, possible ride sharing, 500/month+deposit 209-830-7130

RIPON - Apt. For Rent 1 BR furn tower (3 floors) Country atmosphere in town \$500.00 a month incl. util. and cbl NO SMOKING 209-599-2974

TRUCKS & TRAILERS

2000 - Coleman Niagra Elite Tent trailer. Air conditioning, stoves, shower, toilet, electric lift, fridge, excellent condition with extended warranty. 209-941-9114

2003 - Tahoe 4D-2WD, 33Kmi Roof Rack, Running Boards, Security System, Bose Stereo, 3rd Row Seating, extras NADA \$27,525 Make offer. 925-784-3668

1996 - RANGER XLT, good running work truck. Bedliner, cassette, V6, extra cab, A/C, alarm. Good condition. 5,500.00 OBO 510-537-7222

Utility trailer. Good for small moves and to the dumps. 6 feet long 4 feet wide 2 foot deep. 925-443-2808

2002 - Toyota Tacoma, prerunner, ext.cab, V6, auto, CD player. ONLY 19K miles \$17,800/obo 209-483-5379

1999 - Snug Top X-Vision Truck Cab, Fits 99-05 Ford Super Duty Long Bed Trucks, Dark Hunter Green, \$500/OBO. 925-462-9455

2003 - Nissan Frontier XE, V6, fully loaded, AT, AC, Sport PKG, 42K miles, excellent cond. dont need a truck anymore... \$16,500 obo 510-537-4777

1998 - Dodge RamVan 3500 15passenger commuter. 116,000 miles- well maintained. Dual air, privacy glass, new tires. Excellent condition. \$6000 - 925-625-0534

1990 - Alpenlite DL 27ft 5th wheel, generator, 3 way refig, freezer,AC furnace, water heater, micro, awning, much more \$11,000 925-447-7175

1977 - Winnebago 24ft RV. Good mechanical condition, working refig, A/C for coach. Sleeps5. Some leaks, generator need repair. 72K miles. \$2500 obo. 925-447-2729

1984 - Ford F250, 460, 4 speed, new brakes, tires, rims, bucket seats, tail gate, bed liner. Needs clutch. \$1000. 925-371-0502

1972 - Jeep CJ-5 lifted, engine solid, smog-exempt, needs body work. \$1950/OBO. 209-456-6947

1962 - Ford Falcon Ranchero-289, gear drive, 5-spd,new interior, illness forces sale. Classic car value \$12K to 17K \$7,000 OBO 209-838-0304 209-838-0304

1977 - Winnebago class C motorhome, 20 ft., self contained, sleeps 6, Dodge 360 V-8 engine, 78K miles, extras, good condition. \$2500/offer 209-545-6892

BRIEFLY

Change in clearance forms

The Security Department’s Personnel Security Division has been notified that effective today (April 1) the DOE/NNSA Albuquerque Service Center will no longer accept the LL6370 “Clearance Justification and Certification” (CJC) form. A new DOE/NNSA standardized clearance justification form will take its place. All CJC’s submitted to the Central Clearance Group prior to April 1 will be accepted and will not need to be resubmitted on the new form.

The new DOE F 472.1 Clearance Request/Recertification/Suitability form will be available as an Informed Filler document and instructions and helpful hints will be provided with the new form. The current CJC form will be unavailable in the LLNL forms server once the transition to the new form has been completed.

Contact Kelly Karstens at 4-4909 or karstens1@llnl.gov for questions or concerns or check the website (http://www-r.llnl.gov/securityprogram/central_clearance/news.html) for updates, training information and implementation of the new form.

De-energize is the golden rule

As part of a Department of Energy-initiated electrical safety campaign to eliminate or reduce electrical safety occurrences throughout the DOE complex, Hazards Control is reminding employees who are qualified to work with electricity to de-energize “live” electrical equipment or circuits before beginning their work.

According to Dan Benjamin, Occupational Safety section leader of Hazards Control, employees working with electricity should always turn off and pull the plug on cord-connected equipment before attempting any repair or alteration. They should also follow lockout and tagout (LOTO) rules when controlling any potentially hazardous energy source including electrical energy.

Even when performing lockout and tagout procedures, employees should always test for live energy before starting their work.

Community pool open for business

The Robert Livermore Community Center opened last weekend and the 25-by-33-meter pool is open for business. The new facility is located at 4444 East Ave. The lap swim schedule is as follows: Monday through Friday, 6-7:30 a.m., 9:30-11 a.m., 11:30 a.m.-1:30 p.m. and 5:30-7 p.m. Lap swimming also is available from 7:30-10 a.m. on Saturdays. Swimmers are encouraged to use the Loyola Way parking lot for direct access to the pool.

For prices and more information, go to the Livemore Park and Recreation District Website at <http://www.larpd.dst.ca.us>. Click on the “Winter/Spring 2005 Brochure” to get all the details.



SCOTT WILSON/NEWSLINE

A berry good DNA day

Scientists from DOE’s Joint Genome Institute in Walnut Creek and Lawrence Berkeley National Laboratory teamed with the Mt. Diablo Unified School District last week to present “All About DNA Day” to more than 70 budding scientists from Glenbrook Middle School in Concord. Here, two students prepare to extract the DNA of a strawberry during one of seven workshops that expanded their knowledge of genomics.

1995 - Cruise Master-motor home (A). 33 feet. Full Shower,Leveling jacks, duct air & heat. Excellent Cond. 55,000 miles. Asking 28,850. 209-892-3580

1947 - Willys Jeep. Stock with extras. In running condition. Asking 3,000.00. 925-373-6651

1967 - Custom Series Chevy Truck, new motor and transmission - \$2,500 obo. 925-550-3809

2000 - 21 Ft. Wilderness Hybrid Trailer, front & rear pop outs sleeps 7, ultralite (3200 lbs) \$8,900 925-455-8222

VACATION RENTALS

Arnold cabin, Highway 4 High Sierras, 4 bedrooms, 3 bathrooms, many amenities, hot tub. Reserve now for spring

and summer. 209-478-0340

Cozy mountain cabin above Arnold. 4bedr, 2 bath, wood burning stove, snow fun. Lakes, hiking, beautiful spring weather. 925-245-1114

Soooo cute beach cottage in Santa Cruz near harbor. 2bedr, 2 bath. Spa. Weeknite specials thru April-\$75/nite. Plan ahead for summer fun. 925-245-1114

SOUTH LAKE TAHOE - 3 Bedroom 2 Bath Chalet, comfortably furnished, all amenities,close to all skiing,RESERVE NOW! HURRY FOR SKIING/WINTER FUN!! 209-599-4644

Mendocino/Ft. Bragg - - Ocean View - large 4bd/4.5ba home in private neighborhood, hot tub, courtyard, deck, 2 acres, 3Q/1F/bunks, pets ok w/ deposit 925-455-5942

Maui - Kahana(above Lahaina)Condo - 3 bedroom, 2 bath - Sep 18-25 (Sun-Sun) at the Sands of Kahana. Call for more info. 925-828-3295

Cancun Mexico - Vacation 5 star package with airfare. Call if your planning to go 209-612-2840

Long Barn - Very cute cabin located 15 minutes from Dodge Ridge ski resort. Large loft sleeps seven, one bedroom, one bath.\$75.00/night. 209-824-5727

Tahoe Keys - House, 3 bdrm, 2.5 bath, fenced yard, great views of water and mountains, \$195 per night, call for details 925-376-2211

Pinecrest - (Off Sonora Pass Road), 3 bdrm/2 bath, frplc w/wood, microwave, dishwasher, pool table, large deck and view up No. Fork of Tuolumne, \$195/wknd. 925-449-5513

South Lake Tahoe - Large comfortable home just minutes from skiing and casinos, game room and spa sleeps 12 NS, NP 925-484-3162

CAPE COD. On the Outer Cape in Wellfleet. 2 hrs from Boston Logan. AC. Sleeps 7 in 2 BR. 925-443-7499

WANTED

I am looking for a tennis partner after 5pm M-Th. I am usually 3.5 skill level. 415-760-7474

WANTED--- Teams for the American Cancer Societys 24hr Relay For Life. Lets fight CANCER together. 10 member teams. June 25-26. 925-373-9435

BMX style Bike reasonable price for my son, someone stole his bike. 925-449-1340

Livermore Daycare needs assistant who is cheerful and respects children 8am-5pm pt/ft. No experience necessary, will train. Must be 18+ years old. 925-606-1478

PILATES REFORMER, WINSOR PILATES DVDs (beginning level), TOTAL GYM 11000, 1500 or 2000 in good working condition. 925-447-4775

WANTED: Complete Winsurfing rig, looking for larger intermediate fast board with sails. 925-443-2954

Computer desk wanted for local non profit. 925-830-1868

Moved lately? We are looking for some moving boxes. 925-426-0721

FREEDMAN

Continued from page 1

they rarely leave a trace of their existence.

Freedman said early neutrino pioneers were looking to explain beta decay and in doing so hypothesized the neutrino. The first official paper to explain how a neutrino mass affected the beta decay spectrum, entitled the “Theory of Weak Interaction” by Enrico Fermi, was rejected by *Nature* because “it was too speculative,” Freedman said.

But from that paper, scientists discovered how one might measure the neutrino’s mass from that spectrum. “The only way to do this experiment better is to make it bigger,” Freedman said.

He said nuclear reactors and giant detectors are the only way to detect changing neutrino fla-



JACQUELINE MCBRIDE/NEWSLINE

Stuart Freedman

vors.

Scientists studying electron neutrinos emitted from the sun found too few, only about half of what was expected, suggesting that electron neutrinos may have transformed into another type or “flavor.” This conclusion indicates that neutrinos must have some mass, small as it may be, in order for them to oscillate.

Neutrino oscillation “is a way of using this flavor mechanism to figure out if there are different masses in different neutrinos,” Freedman said.

“We know that neutrinos account for only a small fraction of the mass of the universe, equivalent to that of the stars,” Freedman said. “But they played an important role in cosmology nevertheless.”

The presentation will be rebroadcast on Lab TV channel 2 Thursday, April 7, 10 a.m., noon, 2, 4 and 8 p.m. and 4 a.m. Friday, April 8.

SUPERIONIC

Continued from page 1

from a molecular system into a ‘salt’ composed of mobile protons and stationary oxygen ions,” said Alex Goncharov, a chemist and lead author of a paper that has been accepted for publication in *Physical Review Letters*. “This phase of water is of profound importance not only to planetary science but also to geoscience and fundamental chemistry.”

To recreate the extreme pressure required to force water into the superionic state, Goncharov’s team used a diamond anvil cell, which squeezes the water between two diamonds, creating a pressure 470,000 times

greater than Earth’s atmospheric pressure. The researchers used a laser to heat the water to the intense temperature of 2,400 degrees Fahrenheit. At this pressure and temperature, the water went superionic.

In addition to laboratory experiments, the team used computer models to predict the atoms’ behavior, which showed that observed changes in the optical spectra were consistent with a superionic phase. As the temperature and pressure increase, the water molecules break apart into a non-molecular phase. The oxygen atoms are found at lattice sites, while the hydrogen atoms wander almost freely throughout the crystal. The simulations were performed using Thunder, one of Livermore’s tera-scale computers.

If superionic water was brought to Earth, it would explode because of the extreme pressure and tempera-

ture, but inside a giant ice planet it would be hard as steel and just a bit cooler than the weakest star, Goncharov said.

The paper, titled “Dynamic Ionization of Water Under Extreme Conditions,” was written by Livermore researchers Goncharov, Nir Goldman, Laurence Fried, Jonathan Crowhurst, I-Feng Kuo, Christopher Mundy, and Joseph Zaug.

The observations and models have larger implications for the makeup of the universe. There could be more superionic water in the universe that just hasn’t been observed than there is solid or liquid forms of water.

“I think we may have more superionic than ‘normal’ water in the icy large planets,” Goncharov said. “It is all determined by the pressure — temperature profile of the interior and the amount of material present.”

Ignition facility tour



JACQUELINE MCBRIDE/NEWSLINE

Left to right: Linda Rakow, LLNL, acting chief financial officer; Scott Samuelson; John Post; Cathy McCulloch, budget officer for NNSA; David Crandall, NNSA assistant deputy administrator for Research, Development and Simulation; Neile Miller, Office of Management and Budget; James Lambert, deputy director for the NNSA Office of Planning; Rhys Williams, program manager for NNSA’s Proliferation Detection Program; George Miller. Neile Miller, Defense Programs examiner for the Office of Management and Budget, was given an overview Tuesday of Laboratory activities, briefings on stockpile stewardship and a tour of the recently completed Terascale Simulation Facility.



Newsline
UC-LLNL
PO Box 808, L-797